

FY 2010 Guidelines for Strategic University Research Partnership Proposals

The deadline for proposal submission is Friday, October 2, 2009, by 4 PM PST.

These **2010 SURP Proposal Guidelines and Proposal Templates** are also available online at the [SURP website](http://surp.jpl.nasa.gov/collaborations/callforproposals/2010surpcallguidelines/).

(<http://surp.jpl.nasa.gov/collaborations/callforproposals/2010surpcallguidelines/>)

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Introduction

The JPL Strategic University Research Partnership (SURP) Program provides resources to initiate and cultivate collaborative efforts of mutual strategic value for NASA research and missions between JPL and our strategic university partners listed below. Proposed activities can be either **research initiatives** for collaborative basic and applied research or **educational initiatives** to support classroom activities and career path development for students. The total available funding for SURP is typically \$1.5M to \$2.5M per year. We anticipate that this will support up to 15–20 research initiatives funded up to a cap of \$100,000 each and 10–15 educational initiatives funded up to a cap of \$25,000 each. Our Strategic Universities are not in competition with one another— we anticipate funding 1–2 Research Initiatives and 1–2 Educational Initiatives with each partner university

To strengthen the relationships between JPL and our strategic university partners, we encourage proposals describing research or educational efforts that include activities to be performed jointly at JPL or at the partnering university via the exchange of personnel. Possible exchanges include students working at JPL under the co-supervision of the JPL Principal Investigator and university faculty, JPL investigators working at the strategic partner university, and faculty working at JPL. We also invite proposals in this category that describe research

performed jointly by a JPL team and by the academic faculty investigator while on sabbatical leave at JPL.

Strategic University Partners

JPL has established strategic university partnerships with the following academic institutions through joint memoranda of understanding:

Arizona State University	Stanford University
Carnegie Mellon University	University of Arizona
Dartmouth College	University of California, Los Angeles
Massachusetts Institute of Technology	University of Michigan
Princeton University	University of Southern California

Topical Areas— **New for 2010**

JPL has identified the science and technology areas that are essential for JPL's continuing contribution to NASA's future success and for which JPL's leadership is key. The topical areas are provided below, along with points of contact for each. Additional detail regarding JPL's ten strategic technology directions may be found by downloading "[JPL Strategic Technology Directions 2009](http://scienceandtechnology.jpl.nasa.gov/research/StTechDir/)" (URL <http://scienceandtechnology.jpl.nasa.gov/research/StTechDir/>). Additional information regarding the four key science areas below may be found at the website for JPL's [science division](http://science.jpl.nasa.gov/) (URL <http://science.jpl.nasa.gov/>).

The SURP Program encourages proposals that address the strategic topical areas identified below. Preference will be given to proposals that are aligned with these topical areas, but selection of an exceptional proposal outside these areas is not precluded.

Next Generation Leaders and Innovators <ul style="list-style-type: none"> • Education and training • Student career path development
Solar System Science <ul style="list-style-type: none"> • Planetary Atmospheres and Geology• • Solar System characteristics and origin of life • Small solar system bodies • Lunar science
Earth Science <ul style="list-style-type: none"> • Atmospheric composition and dynamics • Land and solid earth processes, water and carbon cycles • Ocean and ice • Earth analogs to planets
Global Change and Energy <ul style="list-style-type: none"> • Climate science • Energy production, storage, and integration
Astronomy and Fundamental Physics <ul style="list-style-type: none"> • Origin, evolution, and structure of the universe • Gravitational astrophysics and fundamental physics

<ul style="list-style-type: none"> • Extra-solar planets and star and planetary formation • Solar and space physics
Large Aperture Systems <ul style="list-style-type: none"> • Lightweight apertures • Lightweight precision controlled structures • Integrated low-temperature thermal control • Advanced metrology • Wavefront sensing and control • Precision pointing
Detector and Instrument Systems <ul style="list-style-type: none"> • Detector and focal plane systems • Active remote sensing • Passive remote sensing • In-situ Sensing • Active cooling systems for detectors and instruments
Advanced Propulsion and Power <ul style="list-style-type: none"> • Advanced electric propulsion technologies • Advanced chemical propulsion technologies • Precision micro/nano propulsion • Power sources for deep space missions • Energy sources for deep space missions
In Situ Planetary Exploration Systems <ul style="list-style-type: none"> • Entry, descent and landing • Mobility • Sample acquisition and handling • Autonomous orbiting sample retrieval and capture • Planetary protection
Survivable Systems for Extreme Environments <ul style="list-style-type: none"> • Survival in high-radiation environments • Survival in particulate and hypervelocity impact environments • Electronics and mechanical systems for extreme temperatures, pressures over wide temperature ranges • Reliability of systems for extended lifetimes • Space radiation modeling
Deep Space Navigation <ul style="list-style-type: none"> • Mission design and navigation methods • Precision tracking and guidance • On-Board autonomous navigation
Precision Formation Flying <ul style="list-style-type: none"> • Distributed spacecraft architectures • Wireless data transfer • Formation sensing and control
Deep Space Communications

<ul style="list-style-type: none"> • High-rate communication techniques • Optical communications • Autonomous and cognitive radios • Flight transponder technology • Antenna arraying
Mission System Software and Avionics <ul style="list-style-type: none"> • Space-borne computing • Mission system software • Autonomous operations • Software reliability
Lifecycle Integrated Modeling and Simulation <ul style="list-style-type: none"> • Trade space exploration • Coupled and integrated physics-based modeling • High-fidelity model verification and validation • Model integration

Renewal Proposals— New for 2010

SURP awards are for one-year duration. However, holders of existing SURP Research Initiative awards may submit a follow-on or “renewal proposal” for the continued pursuit of the same research objective. The successor proposal must describe the relevant achievements made during the course of the predecessor award. The intent of the successor awards is to permit continuity of graduate student research for up to two years and proposers are strongly encouraged to clearly identify the need for a follow-on proposal for this purpose. Renewal proposals for Educational Initiative awards for the purpose of continuation of the same classroom activities may be also be submitted without an imposed limit on the number of renewals possible.

Summer Internships— New for 2010

The SURP program will further support the career development of graduate students by augmenting a SURP Research Initiative award with additional funds for the purpose of providing a ten-week summer internship at JPL for one student involved with the awarded research. The JPL PI must state in the proposal their intent to host a student to perform collaborative research during their summer internship. The cost of the summer internship will not count against the \$100,000 cap for Research Initiatives. All internships will be implemented through the JPL Education Office. Additional information for costing internships is provided in the budget section below. At this time, we are not able to provide internships for Educational Initiatives.

Program Constraints

- Proposals must include participation by one or more of the strategic university partners listed above.
- There can only be one principal investigator for each proposal and the PI must be a JPL employee.
- Funds cannot be sent to foreign nations.

There is no constraint on how the funds are split between JPL and the university partner.

Schedule

The following schedule of events is planned for the 2010 SURP Call for Proposals:

- Early August, 2009 Call for Proposals released
- October 2, 2009 Proposals due
- November 10, 2009 Technical reviews completed
- November 19, 2009 Programmatic prioritization by JPL completed
- December 18, 2009 Programmatic prioritization by partner universities completed
- Early January, 2010 Awards announced

Required Forms and Proposal Submission Process

1. A proposal template is provided as Attachment 1. This is an unlocked template that allows you to respond to each required section. All figures, graphics, and tables should be placed at the end of the proposal. Please do not use “text wrapping” when incorporating graphics at the end of the report. Do not exceed 8 pages total for this submission, including the signature page, budget sheet, and figures, but excluding any additional budget backup or signatory detail that the university partner elects to include. Detailed instructions for completing the template are provide below.
2. A budget sheet is included in Attachment 1. It must be completed and itemized for both JPL and the strategic university partner. JPL PIs should contact their Section Administrator or Business Administration Manager for assistance in filling out the form.
3. Once your proposal template has been completed, you will need to submit your proposal electronically into the SURP website no later than 4 PM on the proposal due date.

To submit your proposal, the JPL PI should go to the online SURP proposal submission site to begin the submission process. Please note that the SURP proposal submission website is only available through the internal JPL website. The [submission site](#) is scheduled to go live on September 18, 2009.

(URL: <http://surp.jpl.nasa.gov/collaborations/callforproposals/application/>)

Once in the SURP submission site, you will be prompted to input information regarding your proposal, including a 100-word summary, and to upload a PDF of your proposal. At the end of the submission process, the site will provide you with an assigned proposal number. Please keep this proposal number and record it on the upper right-hand copy of your original signed proposal.

If you need any assistance with your electronic submission, please call Lori Williams (3-6392).

4. In addition to submitting your proposal electronically, a signed copy of your proposal and five (5) hard copies must be received by Alma Cardena, (office location 180-604, M/S 180-604, ext. 4-2328) by no later than 4 PM on the proposal due date. Please type or write your assigned proposal number in the upper right-hand corner of each hard copy. Scanned or faxed signatures are acceptable.

How to Complete the Proposal Template Sections

1. **Title:** Enter the full title of the proposal
2. **JPL Principal Investigator:** Enter the first and last name of the PI with JPL line organization number and email address. The PI must be a JPL employee and only one PI can be listed.
3. **Co-Investigator(s):**
 - a. Enter the first and last name(s) of all external partner and JPL investigators with affiliation and email address.
4. **Total Budget Request for FY10:** Indicate whether the proposal is new or a renewal proposal. Enter the FY10 total cost from line#13 of the Budget Sheet.
5. **Student Participants:** For Research Initiatives enter the student name(s), email addresses, and academic level (undergrad, grad) of students participating in this proposed effort. If names are not yet known, enter TBD and the planned academic levels for student participation. Names are not required for Educational Initiatives.
6. **Topical Areas:** Enter a "1" next to the primary topic area for the proposed work. If you wish to designate a secondary topic, place a "2" next to your secondary area.

7. **Objectives:** State clearly and concisely the goals and objectives of your proposal. Answer the question “What are you proposing to do and why is it important technically and programmatically?”
8. **Technical Approach:** Describe your plan to achieve your objectives. List specific tasks, responsibilities, and milestones.
9. **Renewal Proposals only:** Describe the achievements of the predecessor award.
10. **Innovative Features:** What new ideas are being applied in this proposal? Innovation refers to any new evolutionary or revolutionary change in thinking, processes, products, and/or organization. Relate these innovative features to current approaches inside and outside of JPL.
11. **Team Strengths:** Describe the experience, skills and capabilities the team members bring to the proposed effort. List the specific responsibilities of each team member.
12. **Exchange of Personnel:** Describe any plans to have work done at JPL by university students or faculty or work to be done at the university by JPL employees. The hosting organization must agree to the proposed exchange— please state whether such approval has been obtained. Please note that the expenses incurred for any exchange must be included in the budget request. If a summer student internship (new for 2010) is planned, please indicate in this section and describe the work to be performed during the internship.
13. **Significance and Impact of Results:** Discuss the significance of this proposed effort and the impact this work may have on JPL missions and programs. How does the effort contribute to the primary and secondary strategic topic area? How does the effort help strengthen the relationship between JPL and the strategic university?
14. **Plans for Follow-on Funding:** Provide a realistic assessment of the potential for the task for follow-on funding and possible sources for such funding. Discuss how the proposal may enhance the probability of such funding.
15. **Budget:** Complete the budget sheet for both the JPL and strategic university efforts. Universities may elect to provide budget detail in the format of their choosing and it will not count against the 8-page limit for the proposal. In this case, you may simply enter the total university budget request in line #12 of the budget sheet.
 - **Salaries:** JPL— you should not list each person's salary within the budget. You should list the individual's name or job classification and the number of hours for each person, and then provide one total salary dollar figure.

- JPL Category “A” Labor: List the individuals’ name or job classification and number of hours, and then provide one total salary dollar figure.
- Procurements— Equipment, Materials, and Supplies: Itemize all equipment, materials, and supplies needed for the proposed effort.
- Procurements— subcontracts: Itemize all subcontracts needed for the proposed effort. Do not include the subcontract to the university partner. The university subcontract total value is captured on line #12 on the external institution column.

If you plan to host a summer student internship for the proposed effort, you should enter this on line #5a in the JPL portion of the budget. Use the following estimates for the subcontract cost for your proposed intern:

Non-Local Graduate Student	\$11.4 K
Local Graduate Student	\$9.1 K
Non-Local Undergraduate Student	\$9.1K
Local Undergraduate Student	\$6.9 K

Internships will be implemented through the JPL Educational Office.

- Services: Itemize all in-house services needed for the proposed effort.
- Travel: Domestic programmatic travel needed for research purposes is allowed and encouraged. Itemize the travel with a brief explanation of why and when travel is required.
- Other: Itemize any other costs. At JPL, this includes chargebacks for computers, phones, etc.
- JPL Allocated Direct Costs (ADC): ADC and labor fringe rates apply, however MPS does not. Please make sure to use the combined budget (JPL and External Institution) when calculating the Allocated Direct Costs. ADC AND LABOR RATES (except MPS) ARE APPLICABLE to both the JPL and the university portions of the SURP Proposals. If the proposal is prepared late in the fiscal year use the burden rates for the following year. Please contact your Section Administrator or Business Administration Manager for appropriate FY rates and assistance in filling out the form. Calculate the RSA ADC on the External Institution portion only. Please note that if your proposed effort involves hardware or software deliveries or if government-furnished equipment is sent to the university, then CREI subcontract overhead rates will apply, not RSA rates. The overhead for CREI subcontracts is greater than RSA rates.

- **Overhead:** Itemize the overhead at the partner university. Note that some universities waive or reduce overhead in educational circumstances. Please check with the appropriate budgetary authority for university overhead rates.
 - **Individual budget:** Provide total of budgets at JPL and at partner university.
 - **Combined Budget:** This budget must total to no more than the maximum funding amount noted in the SURP Call, and must comprehensively include all costs for the proposed research activity. Thus it includes all itemized costs at both JPL and the partner institution, as well as all overheads at both institutions including all JPL internal burdens. If your proposal includes a student internship, then you may exceed the \$100,000 cap by the cost of the internship, including applicable allocated direct costs. The budget sheet template guides you through this.
16. **University Partner Contract Administrator Information:** Please provide the name and contact information for the university contract administrator to contact to process award subcontract from JPL.
 17. **JPL Principal Investigator Signature**
 18. **JPL PI Division Manager Approval Signature:** The Division Manager (or Manager III equivalent for Program Office submissions) of the JPL Principal Investigator must sign and approve the proposal
 19. **External Co-Investigator Signature:** A faxed or scanned signature is acceptable.
 20. **University representative with signature authority:** For university collaborators, it is customary to obtain the approval of university personnel with contractual or procurement authority. It is acceptable for the university to submit a letter stating willingness to participate in the proposed research in lieu of a signature in this box, so long as that letter is signed by university personnel with contractual or procurement authority. A faxed or scanned signature is acceptable.

Proposal Evaluation Process

1. An evaluation of the SURP proposals will be carried out by the SURP Program Office, which will arrange for technical and programmatic review through the topic area Champions. The technical review will be based on the following criteria:
 - Innovation
 - Merit of the technical approach
 - Strength of the investigation team
 - Alignment with strategic topic areas
 - Impact on JPL capabilities for future missions and programs

- Cost and schedule realism
 - Possibility of follow-on funding
2. Based on the outcome of the technical review process, the SURP program office will forward a recommended list of awards to the JPL Chief Scientist and Chief Technologist. The SURP program office will also discuss potential selections with the Partner Liaisons. The OCS/OCT will review the results of these discussions and make their final recommendations to the JPL Director. Proposals selected for award will receive an award letter via email.

SURP Program Obligations

By accepting an award, the proposer is also accepting the following terms and conditions:

- a. The JPL PI is required to: 1) manage the task expenditures to ensure that they do not exceed the amount of the award (if necessary, check with a business manager or administrator on a regular basis) and 2) report regularly on the funds expended. The work on the tasks will need to commence immediately upon receipt of the funds. From the date that the accounts are opened a period of 12 months will be specified as the duration of the research task.
- b. The JPL PI is required to initiate all the paperwork necessary to execute an RSA-subcontract (or CREI-subcontract, if appropriate) with the external collaborator. Once you receive a Project/Task number, stay in close contact with the SURP Acquisitions Manager, Margaret "Peggy" Easter at x4-5354 (email: margaret.b.easter@jpl.nasa.gov) or your Subcontracts Manager (SM) who will guide you through the subcontracts process. If you need assistance identifying the negotiator for a Partner university, contact the SURP Acquisitions Manager.
- c. If you are collaborating with foreign nationals who are not JPL employees (note that NASA funding cannot be sent to foreign countries) and you wish to have them visit the Laboratory, refer to the "Foreign National Access to JPL" policy statement identified in "JPL Rules!"
- d. The JPL PI and external collaborator(s) may elect to give an oral presentation of the status of the joint work to appropriate Section or Division management. The budget for the travel of non-JPL collaborator(s) to JPL for this presentation must be included in the overall proposal budget submission.
- e. Reporting annually on the status of the task by the JPL PI via an Interim or a Final report is required. Failure to submit a report could result in the Chief Scientist and Chief Technologist prohibiting you from being considered from any further funding opportunities, or may lead to closure of the task account.

The SURP principle objective is to provide funding to promote innovative seed efforts in promising fields of science and technology for which conventional program resources are not available and to cultivate collaborative work with our strategic university partners. As such, every award that is made in the program is expected to contribute to the strategic needs of the Lab. It is anticipated that the researchers working on these tasks will publish the results of their work in refereed journals. At the end of the fiscal year you will be asked where you have published your results or where you will be submitting your results for publication.

Any external publication or presentation (other than the Annual Report) of work performed under SURP must have the following acknowledgement:

"This research was carried out at the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration and funded through the Director's Research and Development Fund Program." (Note: SURP funds are an allocation from the DRDF program funds.)

Links to Proposal Template, Guidelines and Submission Site

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Questions

Please contact Paula Grunthaner for any questions relating to the SURP proposal call and process. You may reach her via email (Paula.J.Grunthaner@jpl.nasa.gov) or via phone (818-354-0360 office, 818-687-9239 mobile).